Using SpinStudio modules with a solderless breadboard

The propeller has many exciting capabilities available to it's users.

Examples include...

- VGA or composite video generation
- Keyboard and Mouse support
- Xbee communication
- Ethernet
- Sound

Using these capabilities from a software standpoint is as simple as using many of the objects available from Parallax's Object Exchange. However, from a hardware standpoint things aren't so easy when you are experimenting with a solderless breadboard. Many of the connectors involved have connections that don't fit nicely into a solderless breadboards 0.1” spacing. There are adapters readily available to use these connectors, but there is always support circuitry that needs to be assembled each time you want to use them. What if there was an adapter available that combined the connector you desire, along with all the necessary support circuitry? Well that adapter does exist, they are the SpinStudio adapters!

But wait.....

The SpinStudio modules connect to their own specially designed Main Board with a 20 position double row header. How is that going to fit nicely into a solderless breadboard?

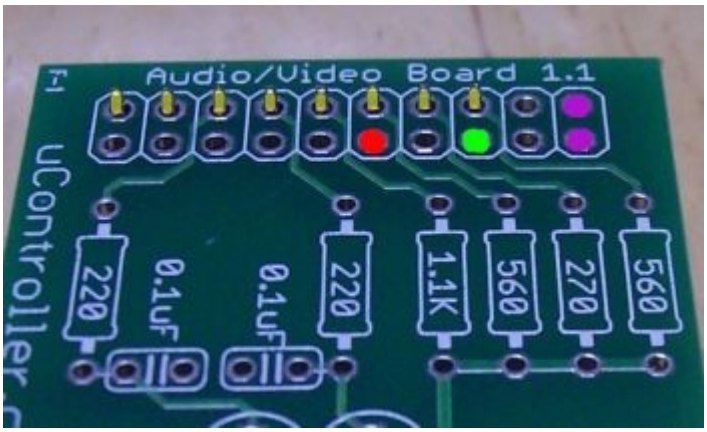
This tutorial is designed to explain how to assemble your SpinStudio modules so that they will easily plug into a solderless breadboard.

So turn to the next page and lets get started...

Assembly

Assemble you SpinStudio module as instructed in that modules documentation, but skip the step that instructs you to insert the 20 pin header.

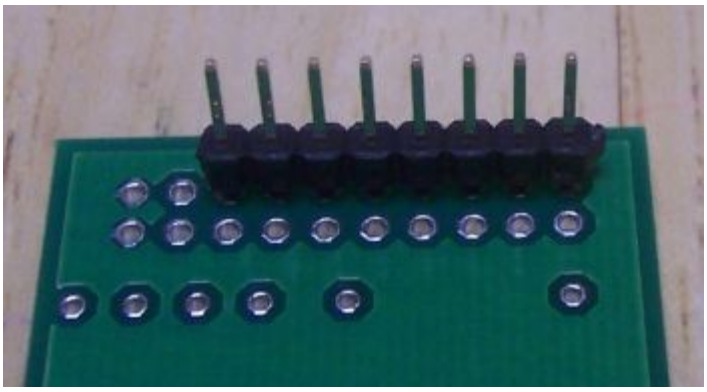
Instead insert a 8 pin straight header in it's place as shown in the photo below.



The tips of the 8 pin header is highlighted in yellow.

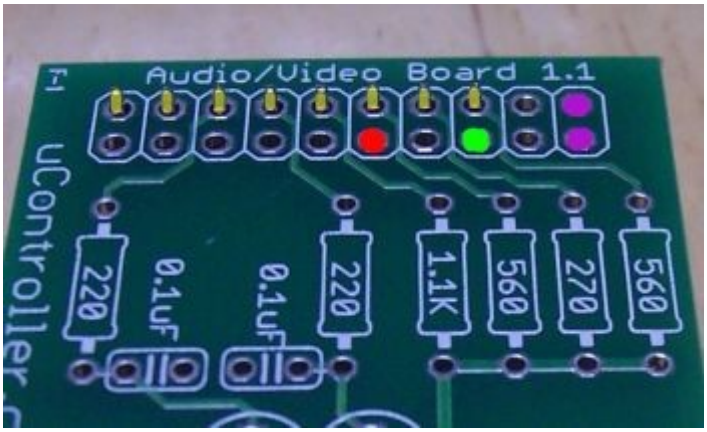
Insert this connector from the bottom and solder from the top of the PCB. The short end of the pins go through the circuit board, leaving the long ends of the pins extending downward to insert into the breadboard.

Looking at it from the bottom, you'll see this.



Now we have the connection complete for the Propeller IO pins. Simply plugging this into the breadboard adjacent to the Propeller will connect it directly to 8 contiguous Propeller pins.

Now let's investigate supplying power.

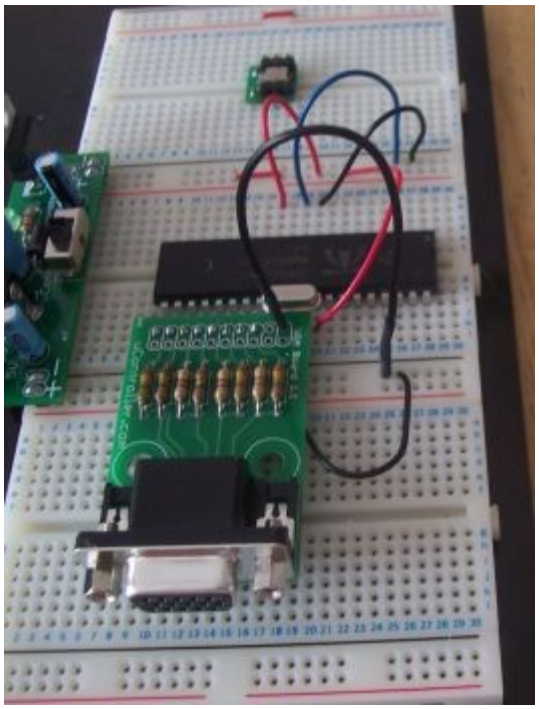


Looking again at this image, you'll see I highlighted several pins, I'll explain their functions in detail. The function of each of these pins is constant for any SpinStudio module, but may not be used in every application. Below is a chart detailing which power connections are required for some of the more popular SpinStudio modules.

	Purple	Green	Red
	VSS (ground)	+5 volt	+3.3 volt
Audo/Video module	Required	Not needed	Not needed
VGA	Required	Not needed	Not needed
Parallel LCD	Required	Required	Not needed
Xbee adapter	Required	Not needed	Required
PropJoy	Required	Not needed	Required
Protocard	Required	Required	Required
Mouse/Keyboard	Required	Required	Required
IO Servo	Required	Required	Not needed

Simply insert a suitable wire from the top of the PCB, and solder on the bottom of the board (opposite of the 8 pin header) when the module is plugged into a solderless breadboard, you merely have to plug the other end of each wire into the appropriate power connection (VSS, 5V or 3.3V) Only one of the 2 pins for VSS needs to be connected.

On the next page, you'll see a completed SpinStudio module plugged into a solderless breadboard with the VSS wire connected as needed.



This photo shows a modified VGA module plugged into a breadboard. Note the Black wire connecting the VGA module to the VSS rail on the breadboard.

This same method can also be used with a Propeller Demo Board, but jumper wires will be required to connect the 8 IO pins to the appropriate header location on the Demo Board.

All Done!

If you have any Questions or Comments about the preceding tutorial. Feel free to contact me at mailto:Brian@uController.com